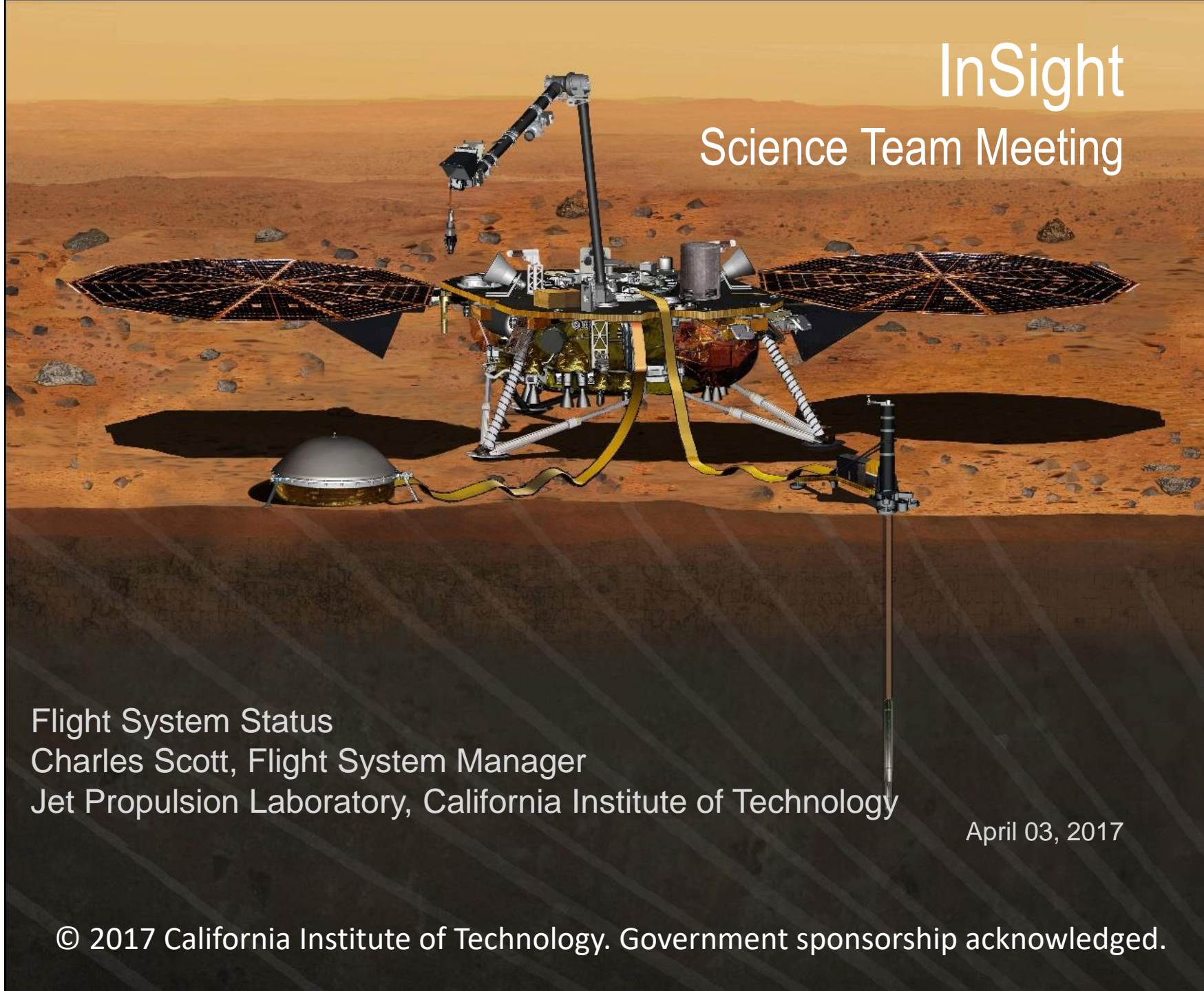




InSight

Science Team Meeting



Flight System Status
Charles Scott, Flight System Manager
Jet Propulsion Laboratory, California Institute of Technology

April 03, 2017

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- Spacecraft Status
- Significant Challenges for ATLO 2.0
- Overview ATLO 2.0 Activities
- ATLO Discussion Topics

- Spacecraft in storage at SSB Low Bay. Periodically checked by running FSW Diags
- Subsystems work during hiatus:
 - GNC - RF Switch SN001 & SN003 to be used; SN002 flight spare
 - EDL – Atmospheric models work
 - Structures – Retroreflector
 - Thermal- Instrument Models need more detail. JPL has done some work, but need other info from CNES
 - Prop - Pressure monitoring on going
 - Harness/EPS/C&DH - Battery test in April
 - FSW - Regression Testing in work; Work on UDL FSW Bug; Develop FSW 6.0+
 - ATLO - New ATLO Flow; Procedures in work
 - Testbeds – Arm reintegrated into STL3
 - Mission OPS - Contingency Procedures in work; File Tracker aiming to release next few months

- Significant Challenges
 1. SSB Highbay is not available for ATLO-2
 - We will require additional moves between MTF, RAL, and SSL
 - These InSight moves must be shoehorned in around Orion, GOES, A2100, GPS-III, and Classified Missions → all are very busy right now
 2. Payload Performance Tests
 - Based on the Payload TIMs and weekly working groups, many tests have increased in duration and/or complexity
 3. Lack of Spacecraft Activities to Backfill Payload Activities
 - S/C activities have been pared back to the bare bone
 - We will not have flexibility to leapfrog S/C activities earlier in the flow
 4. Loss of OSIRIS-REx Synergy
 - Since OSIRIS-REx has launched, InSight won't be able borrow personnel as easily for the double shifts and weekend shifts

ATLO-2 will be much more challenging than ATLO-1

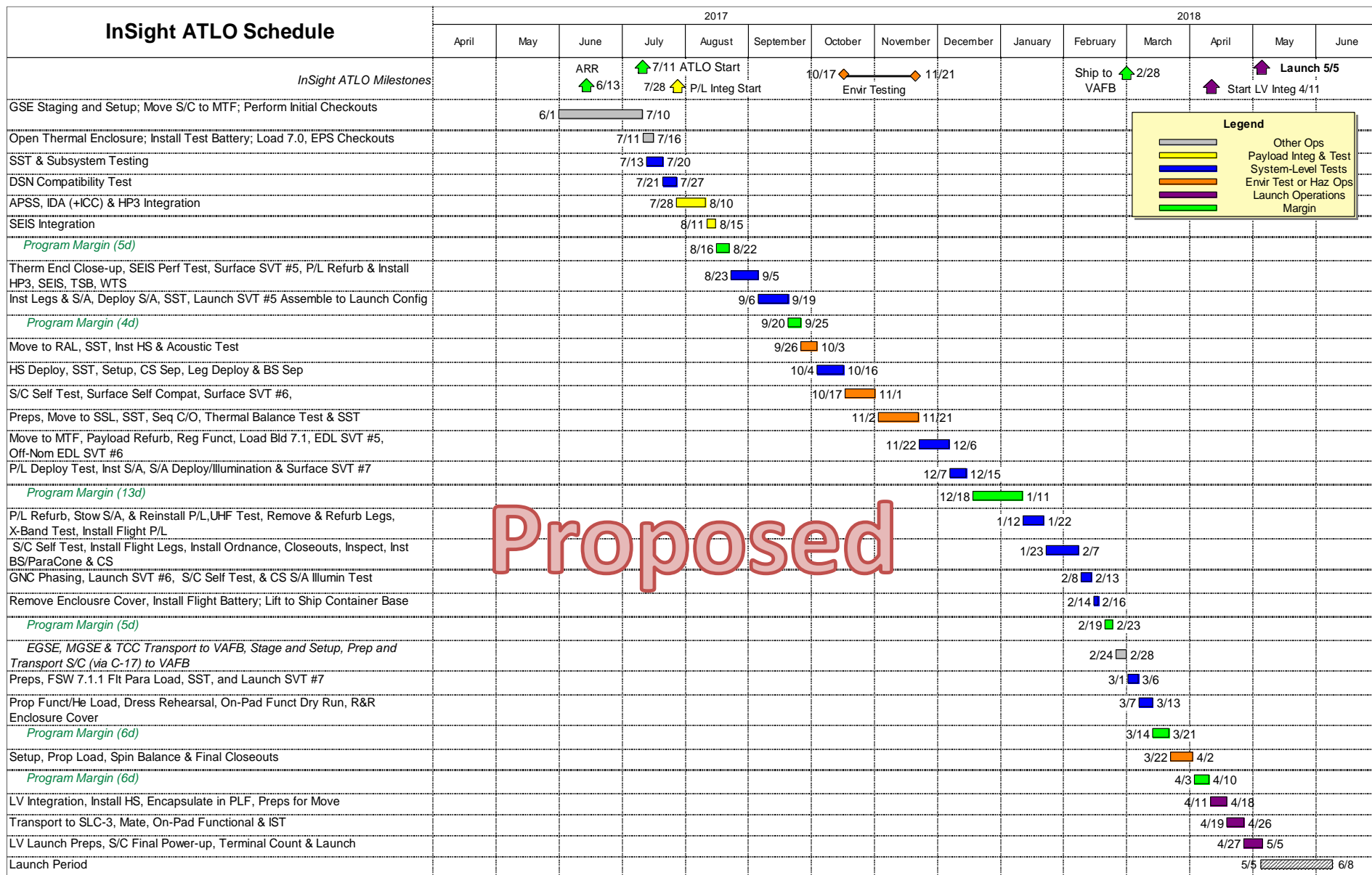
- Assumptions:
 - Ship date on Feb 28, 2018
 - Launch date on May 5, 2018
 - No work during Thanksgiving or Christmas breaks
 - Maintain adequate margin to satisfy the JPL design principles
- Concerns with late deliveries slipping the ATLO schedule to the right:
 - Even more conflicts with the ATLO test facilities
 - Higher likelihood of “employee burnout” and “human errors”
 - Less resiliency to major issues/failures during the ATLO flow

- Setup Support; S/C Move to MultiTest Facility (MTF)
 - Initial Checkouts; Open Thermal Enclosure; Install Test Battery; Load 7.0; Subsystem Tests; Deep Space Network (DSN) Compatibility
 - **Instrument Integration (APSS, IDA, SEIS, HP3, TSB, WTS); Thermal End Closeup; Surface System Verification Test (SVT) #5**
 - Install Legs and Solar Arrays (SA); Launch SVT
- Move S/C to Reverberant Acoustics Laboratory (RAL)
 - Heat Shield (HS) Install; **Acoustic Test**; HS Deploy; CS Sep; Leg Deploy; Back Shell (BS) Separate
 - S/C Self test; **Surface SVT #6**
- Move S/C to Space Simulation Laboratory (SSL)
 - **Thermal Balance Test**
- Move S/C to MTF
 - Load 7.1; EDL Nominal and Off Nominal SVTs; **Payload (PL) Deploy Test**; SA Install; **Surface SVT #7**
 - **PL Referb**; Stow SA; UHF and X Band Tests; Remove Legs
 - Install Legs ; Install ordinances; Install BS Paracone and CS; GNC Phasing; Launch SVT
 - Remove Enclosure Cover; Install FL Battery; Pack to Ship
- Ship S/C to Vandenberg Air Force Base (VAFB)
 - Launch SVT; Prop Functional; He Load; Dress Rehearsal; On Pad Func. Dry Run Prop Load; Spin Balance
 - LV Integration; HS Install;
- Move S/C to Pad

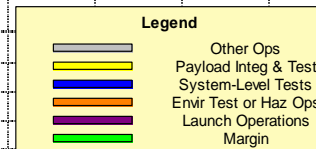
Launch!



Proposed ATLO Flow



Proposed



- Hard vs. Soft Requirements:
 - Payload testing – performance, environments
 - What do we have to do, and what has to be done post environments?
- Information on Interfaces:
 - May need better coordination on some of the new stuff that the IOTs are bringing to ATLO-2 (e.g., Tilt fixture)
 - Need to plan for TVAC because there may be long lead parts required; haven't gotten final information yet
- Access to LM during ATLO
 - Contact Chuck Scott (Charles.Scott@jpl.nasa.gov) 2 months in advance with the information in Backup Slides and Purpose/Justification.

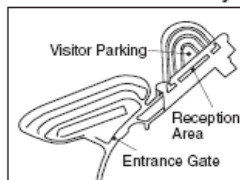


Backup

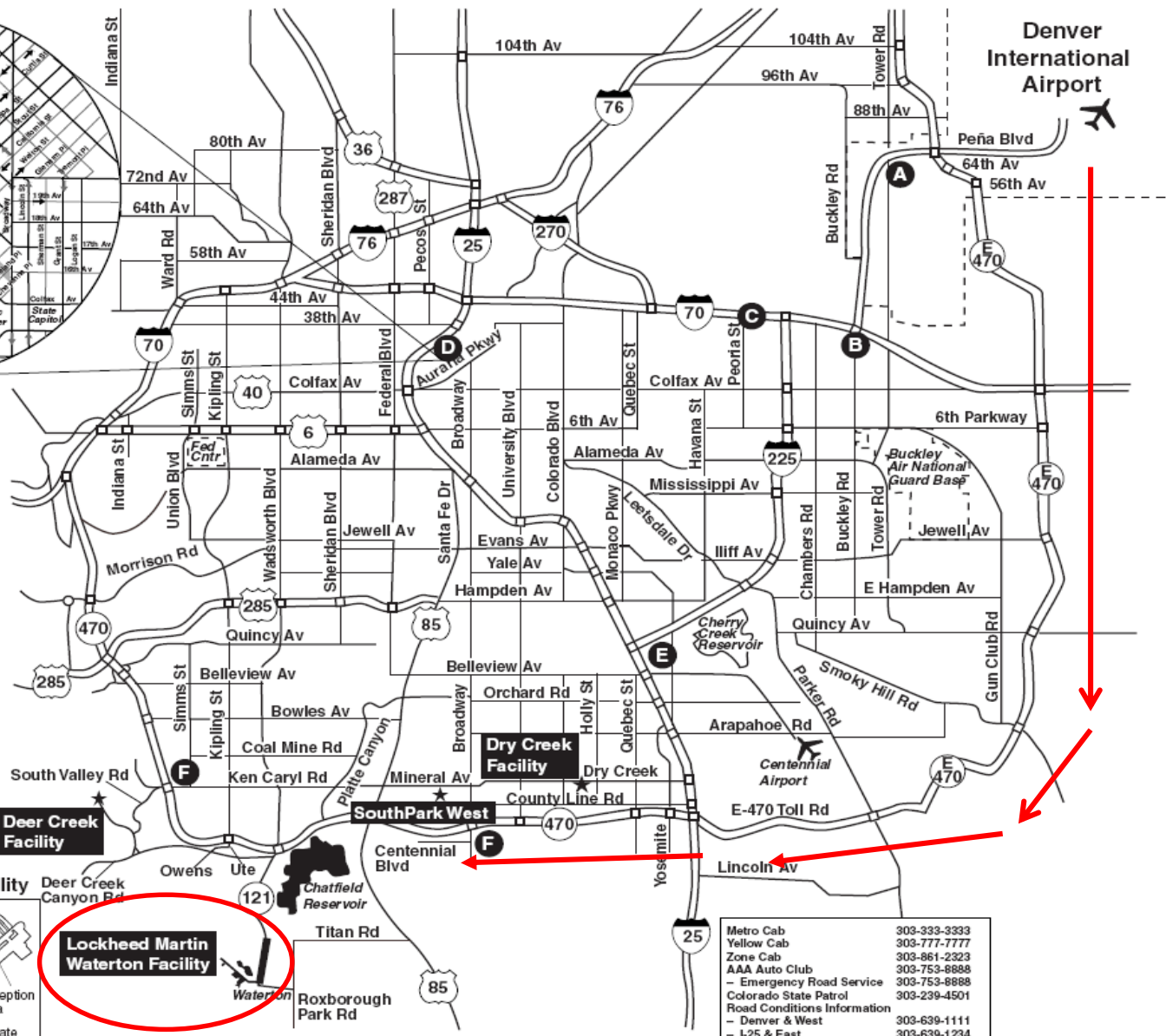


A	DIA Hotels—Tower Rd & Peña Blvd	
	Hampton Inn	303-371-0200
	La Quinta	303-371-0880
	Fairfield Inn	303-576-9640
	Courtyard by Marriott	303-371-0300
	Comfort Suites	303-371-0300
	Days Inn Business Plaza	303-373-1500
	Holiday Inn Express	
	Hotel & Suites	303-373-4100
	Ramada Limited	303-373-1600
	Red Roof Inn	303-371-5300
B	DIA Hotels—I-70 & Airport Blvd	
	Crystal Inn	303-340-3800
C	DIA Hotels—I-70 & Peoria	
	La Quinta Inn	303-371-5640
	Best Western	303-373-5730
	Sleep Inn	303-373-1616
D	Downtown Denver Hotels	
	Adam's Mark Hotel	303-893-3333
	Brown Palace Hotel	303-297-3111
	Westin Hotel	303-572-9100
	Marriott City Center	303-297-1300
	Oxford Hotel	303-628-5400
E	SE, DTC & Inverness Hotels	
	Marriott (I-25 & Hampden)	303-758-7000
	Marriott (DTC)	303-779-1100
	Hyatt DTC	303-892-1222
	Scanticon	303-799-5800
F	C470/Highlands Ranch Area Hotels	
	Residence Inn	303-683-5500
	Lonetree Country Club	303-790-0202
	Fairfield Inn	303-290-5700
	Comfort Suites	303-770-5400
	Woodfield Suites	303-799-4555
	Holiday Inn Express	303-792-3377
	Towne Place Suites	720.981.1000
		303.972.0555

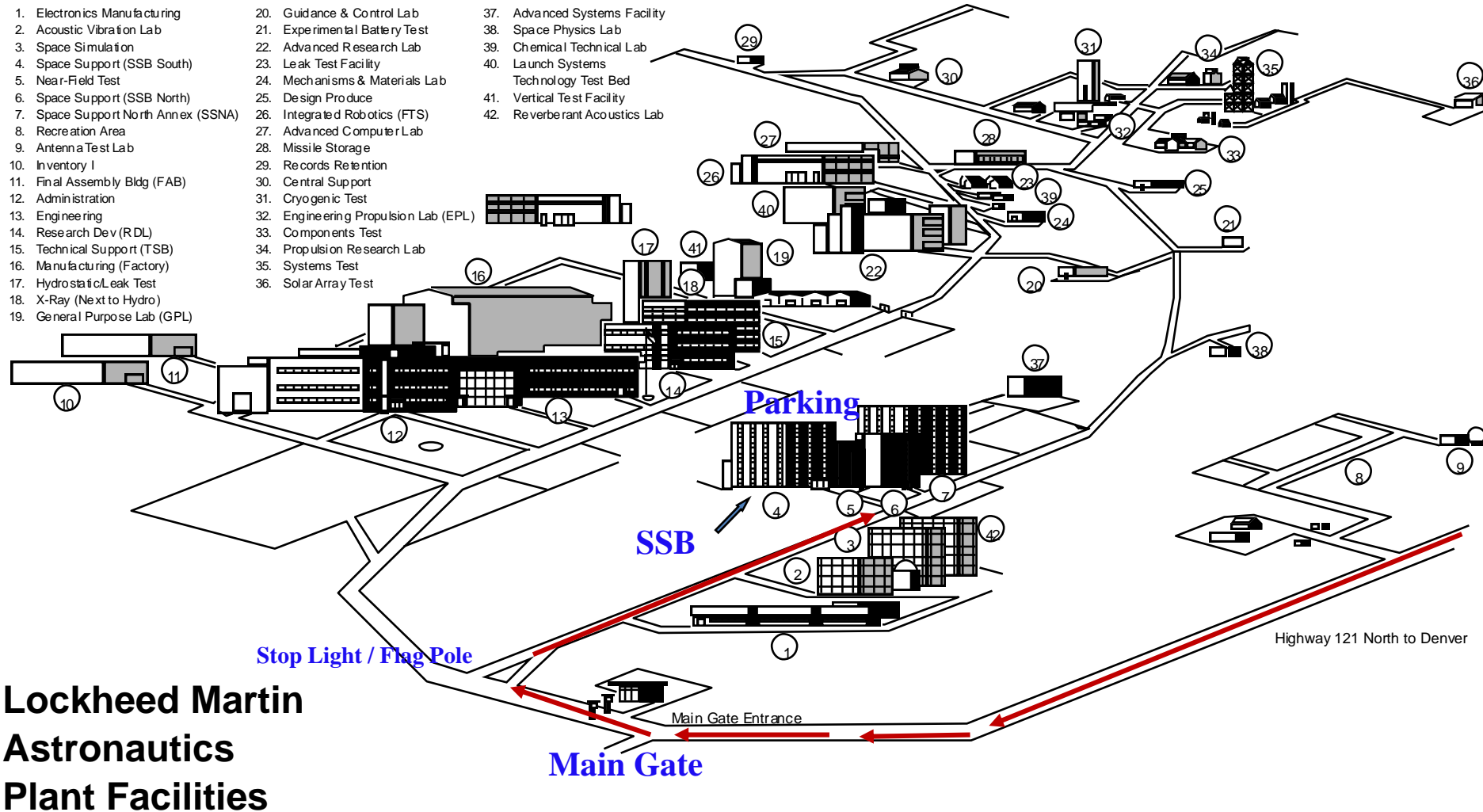
Deer Creek Facility



Lockheed Martin Waterton Facility



Metro Cab	303-333-3333
Yellow Cab	303-777-7777
Zone Cab	303-861-2323
AAA Auto Club	303-753-8888
- Emergency Road Service	303-753-8888
Colorado State Patrol	303-239-4501
Road Conditions Information	
- Denver & West	303-639-1111
- I-25 & East	303-639-1234



On-site cafeteria serves breakfast and lunch (closes at 1pm daily; closed entirely on LM "Off-Fridays").

- Each visitor (US citizen or green card holder) to LM provides the following:
 - First & last name
 - Company affiliation
 - Email address
 - Phone number
 - (If applicable) Green card number and date issued

At least a week
advance notice of
the visit is
requested.

- Each visitor (non-US citizen) to LM provides the following:
 - First & last name
 - Company affiliation
 - Email address
 - Phone number
 - Passport number
 - Passport country
 - Date of passport expiration
 - Country of citizenship
 - Birthdate
 - Country of birth
 - Home address

LM Security
requires 6 week
advance notice for
non-US citizen
visits.